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California Incense-Cedar



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CALIFORNIA INCENSE-CEDAR

(*Libocedrus decurrens*)

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California incense-cedar, commonly called incense-cedar, grows in California, southwestern Oregon, and a small quantity in Nevada. It is a long-lived, slow-growing tree generally overtopped and shaded by its faster-growing associates, sugar pine and ponderosa pine. Incense-cedar reproduces readily on almost any kind of forest soil and is holding its place in the forests of California. Under exceptionally favorable conditions some trees reach a diameter of 6 feet and a height of 150 feet at an age of approximately 500 years. Nearly all the timber approaching this size has been cut. Under average conditions mature trees are 20 to 30 inches in diameter and 75 to 110 feet in height. Live trees of saw-timber size are subject to attack by a fungus which causes cavities in the heartwood and greatly reduces the value of the trees for lumber. The action of this fungus ceases after the tree is felled. The wood of incense-cedar is soft, light in weight, of fine uniform texture, and is highly durable. The small proportion of high-grade lumber produced is used principally in the manufacture of pencils and venetian blinds. The lower grade lumber, of which there is a large proportion due to fungus attack, is used principally for rough construction. The wood is also used for fence posts and ties.

Nomenclature.—California incense-cedar is generally known as incense-cedar and sometimes simply as cedar.

Distribution and growth.—The range of incense-cedar extends from southwestern Oregon southward through California into Mexico and Lower California. Small stands are found in western Nevada. (See fig. 1 for range in United States.) The commercial range is confined largely to the Sierra Nevada Mountains in California and the mountain regions of northern California and southern Oregon. The tree is distributed widely throughout California and grows under a variety of conditions of climate and altitude but is rarely found below an altitude of 1,000 feet. It produces some seed each year and an abundance of seed about every third year. The lightness of the seed (about 16,000 to the pound) combined with their relatively large wings results in wide distribution. The wings contain a pungently odorous resin which renders the seed less desirable to rodents. This and the abundance and wide distribution of the seed are factors favorable to the perpetuation of the species. Young trees are very tolerant of shade but require more light for full development as they grow older. At maturity they have a shreddy, deeply furrowed, cinnamon-colored bark, and a rapidly tapering trunk which becomes buttressed at the base as the tree matures. The thick bark of the older trees offers considerable resistance to fire. Young trees with thinner bark and foliage closer to the heat of the flames are more severely damaged.



FIGURE 1.—Range of California incense-cedar (*Libocedrus decurrens*) in the United States.

Incense-cedar trees 60 years of age, when grown under forest conditions, have an average diameter of about 6 inches and an average height of about 23 feet. At 100 years of age the average diameter is about 13½ inches and the average height about 65 feet. On cut-over lands the growth is more rapid.

The tree is not a good lumber producer because of its short body and rapid taper, and its susceptibility to a fungus (*Polyporus amarus*) after it attains an age of about 140 years. This fungus causes what is known as "dry rot," "brown rot," or "peckiness." A large proportion of the present old-growth timber is affected by the fungus, which ceases its work when the tree is felled and apparently has no further effect on the durability of the wood. The fungus attacks the heartwood only, which it frequently reaches through fire scars, and causes the formation of numerous cavities from ¼ to 1 inch in diameter and from 1 inch to several feet in length. The cavities are filled with a dry, brown deposit.

Supply.—The total stand of incense-cedar of saw-timber size was estimated at 11 billion board feet in 1918.¹

¹ MITCHELL, J. A. INCENSE-CEDAR. U. S. Forest Serv. Bul. 604, 40 pp., illus. 1918.

Of this amount 10 billion board feet was assigned to California and 1 billion to Oregon and Nevada combined. Considerable cutting of incense-cedar has taken place since this estimate was made, especially in California. A recent rough estimate placed the stand in that State at 7,370,000,000 board feet² and a recent forest survey showed a stand of 2,300,000,000 board feet of incense-cedar in Oregon.³ Combining the California estimate with the survey figure for Oregon and adding a small stand for Nevada would give 9,700,000,000 board feet as a rough approximation of the present stand of incense-cedar of saw-timber size in California, Oregon, and Nevada.

Production.—In the statistics of lumber production⁴ the only years in which incense-cedar is listed separately from the other western cedars are 1940, 1941, 1942 and 1943. During this 4-year period the average annual production of incense-cedar lumber was approximately 44,100,000 board feet. About 91 percent of it came from California and the remainder from Oregon. It is probable that the average annual production of incense-cedar lumber for the period 1940–43 was considerably above that for the 10-year period 1933–42 on account of the heavy demand for lumber of all kinds brought about by the war. A rough estimate for the average annual production of incense-cedar lumber for the period 1933–42 would be 30,000,000 board feet. Indeterminate amounts of timber are used for split and hewed products such as posts and railway ties. The average annual cut of incense-cedar for all purposes in recent years is estimated at 35,000,000 board feet.

Properties.—The sapwood of incense-cedar is white or cream colored and the heartwood light brown, often tinged with red. The heartwood darkens with age and exposure to light and air. The wood has a spicy resinous odor. The annual rings are generally distinct in wood of comparatively rapid growth such as is formed in the early life of thrifty trees, and less distinct in the outer portion of old trees and in trees growing under unfavorable conditions. In representative material there are generally 10 to 20 annual rings to the inch. The wood has a fine uniform texture, is light in weight,⁵ moderately weak and soft, low in shock-resisting ability, and lacks stiffness. It has a small shrinkage and is comparatively easy to season with little checking or warping. The wood splits readily and evenly, and is easy to work with tools. It takes a good polish and is classed with the woods that hold paint longest and suffer least when protection against weathering becomes inadequate. Incense-cedar is highly durable, ranking with cypress, redwood, black locust, and the other cedars in this property.

Principal uses.—California incense-cedar is used principally for lumber, fence posts, and ties. Nearly all of the high-grade lumber is used for pencil slats and venetian blinds. A little goes into so-called "mothproof" chests and toys. The bulk of the incense-cedar lumber, however, is more or less "pecky" and is used locally for rough construc-

² FOREST SERVICE. EXTENSIVE ESTIMATES. 1938. [Unpub. ms.]

³ See reports of the Pacific Northwest Forest Experiment Station, FOREST RESOURCES OF THE DOUGLAS-FIR REGION. H. J. ANDREWS, and R. W. COWLIN. U. S. Dept. Agr. Misc. Pub. 389, 169 pp., illus. 1940; and, FOREST RESOURCES OF THE PONDEROSA PINE REGION. R. W. COWLIN, P. A. BRIEGLEB, and F. L. MORAVETS. U. S. Dept. Agr. Misc. Pub. 490, 99 pp., illus. 1942.

⁴ Bureau of the Census.

⁵ The average weight of incense-cedar in a thoroughly air-dry condition (12 percent moisture) is 25 pounds per cubic foot.

tion work where cheapness and decay resistance are important and the presence of "pecky" material is not objectionable.

The qualities of incense-cedar which adapt it particularly to pencil manufacture are straightness of grain, softness, and ease of whittling. Staining is sometimes necessary to secure a satisfactory color. The lumber to be used for pencils is first seasoned and then cut into slats of the desired size.⁶ The slats are sorted, stained if necessary, bundled,⁷ and shipped to pencil factories in this country and in Europe.

The use of incense-cedar for venetian blind slats⁸ is due to its ability to stay in place, its close uniform texture, and excellent paint-holding properties.

Incense-cedar is well suited for fence posts on account of its durability and because of the ease with which it can be split to post sizes. Ties are generally hewed and are highly satisfactory from the standpoint of durability but require tie plates on account of the softness of the wood. Other split or hewed products made from incense-cedar include short poles, stubs for poles, grape stakes, and shakes (split shingles).

The amount of incense-cedar lumber used in the manufacture of wooden products in 1940 was 39,976,000 board feet. Of this total 29,100,000 feet went into pencils and 9,782,000 feet into venetian blinds. The small remainder was used for boxes and toys.

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⁶ Pencil slats are $\frac{1}{4}$ inch thick, 7 or $7\frac{1}{4}$ inches long, and $2\frac{1}{2}$ inches wide.

⁷ The bundles generally contain enough slats to manufacture 1,200 pencils.

⁸ These slats are $\frac{1}{8}$ inch thick, about 2 inches wide, and of varying length depending on the size of the window opening.

